National Prototype Units of Analysis – April 2005
National Crosswalk Service Center

Background on the National Units of Analysis

The national prototype units of analysis were originally developed by the National Occupational Information Coordinating Committee (NOICC) in support of Occupational Information Systems developed by the states. One of the missions of NOICC and its network of state committees (NOICC/SOICC) was to support decision making by state and local education planners. The units of analysis were seen as a tool for use by planners as part of their evaluation of the need for new or additional training or education programs.

NOICC periodically updated the national units of analysis to stay current with occupation and education taxonomic revisions. The last set of national prototype units of analysis was developed in 1996, shortly before the NOICC program was discontinued. Since that time, the National Crosswalk Service Center (NCSC), in coordination with the ALMIS Resource Center (ARC), has continued maintenance and development of prototype units of analysis for use by states. The NCSC receives funding from the Employment and Training Administration through the ARC. Through maintenance of the prototype units of analysis, the NCSC facilitates providing planning information to state and local education agencies and the inclusion of educational data in state Labor Market Information systems. For more information about the ARC and NCSC, visit their respective web sites at www.almisdb.org and www.xwalkcenter.org.

There have been recent taxonomic changes in both the occupation and the education coding systems that have required significant update activities for the national prototype units of analysis. The occupation taxonomy changes were from the previous Occupational Employment Statistics (OES) coding system to the Standard Occupational Classification (SOC) occupational coding system. Concurrently, the Classification of Instructional Programs (CIP) taxonomy was revised by the U.S. Department of Education from the 1990 version of the CIPs to the 2000 version of the coding for education programs.

The National Crosswalk Service Center has updated versions of the national prototype units of analysis that contain the latest version of the Standard Occupational Classification (SOC) codes for all of the occupations, and both the 1990 and 2000 versions of the CIP codes. In addition, there is a file that contains narrative analysis information for the units using information from the 2004-05 Occupational Outlook Handbook (OOH). (The narrative analysis update work was supported by the National Supply Demand Consortium.)

The prototype units of analysis files are available in two versions from the NCSC: one for the ALMIS Database and one using the file structures traditionally used for the NOICC files. Appendices with file structures for both versions are included in this document. Note that the

ALMIS Database is a heavily normalized relational database, and the units of analysis file structures may reference other files whose structure is not included in this document. Generally speaking, unless unique sets of units are developed for different geographic areas or time periods, those references can be ignored.

Development of the National Units of Analysis

This portion of the paper describes the rationale used in forming the national prototype units of analysis. There are three levels of organizing principles within the national units of analysis structure. This hierarchy was designed to bring related clusters near each other, and to make the units more useful for education and training initiatives.

> *Level 1*: The broadest level is referred to as *super clusters*. There are 16 of these super clusters that cover broad content areas such as Creative Arts, Engineering. (NOTE: codes and titles for super clusters and cluster groups are documented in a separate file that is distributed with the cluster files.)
>
> *Level 2*: These super clusters are further subdivided into *cluster groups*. There are 43 cluster groups. They provide a mid-level detail point. An example of the cluster groups would be Fine and Performance Art, and Design, within the Creative Arts super cluster.
>
> *Level 3*: The finest level of detail is the *units of analysis*. At the unit level, occupations are related to programs that provide training related to those occupations.

In the April 2005 version of the national units of analysis, the unit codes reflect, through a suffix, a draft set of relationships between the units of analysis and the U.S. Department of Education career clusters. At this point, the organizational structure of the units still retains the super cluster/cluster group hierarchy. At a later point, the use of the DOE career clusters will be examined as a possible organizational basis for the national units of analysis. For now, the purpose of including the career clusters in the unit code is for reference purposes.

There are three different types of clusters in the national units of analysis. These cluster types are identified by the letter A, B, or C at the end of the unit code number.

> "A" clusters are those that are most valid for supply/demand analysis as the occupations for the most part require formal educational training in one of the related programs.
>
> "B" clusters are those where the related programs do train for the occupations in the cluster, but where formal educational preparation is not required for entry into the occupations, and may not be the most common source of potential supply.

- C clusters contain only programs alone, or occupations alone, and do not have any supply/demand matching.

One purpose of the units of analysis is to provide a resource to assist in the analysis of supply and demand information, and for use in planning decisions about education and employment training programs. The grouping of occupations and related training programs allows demand data to be compared to institutional supply information from education and training programs. Narrative information about occupational outlook and preparation requirements provides additional support for conducting supply and demand analyses.

A second purpose of the units of analysis is to provide career information delivery systems (CIDS) and related products, with resource for relating occupations to required or related education and training programs for career decision making.

The national units of analysis are based on the relationships between the Standard Occupational Classification (SOC) occupations and the Classification of Instructional Programs as laid out in the SOC-CIP crosswalks maintained by the National Crosswalk Service Center. States can adopt or modify these units of analysis to use in displaying their occupational demand and institutional supply data.

Future development possibilities

In the past, there were multiple versions of the national units of analysis by OES survey code and OES matrix code, allocated by industry, and apportioned by supply level. Depending upon the need for these variations of the units of analysis, these versions may be developed in the future. Currently, there is one version of the national prototype units of analysis for 2004, based upon the SOC occupations with no allocations included.

Customizing the national units of analysis for a State

The national units of analysis are intended to be prototypes. They may be used to examine national supply and demand data. However, it is recognized that states will most likely need to tailor the units to reflect the occupations and programs, and perhaps specialized coding, that exist within a particular state. This section of the paper outlines some of the steps that will be needed to customize the national prototype units of analysis for use in a state. (These steps are based on the procedures outlined in the Micro-OLMID and OIS Manual produced by NOICC and dated November 1996.)

In general, a state must substitute state occupation and program codes for national codes where there are differences. This can entail deleting some national codes, modifying national codes, and adding state codes. When additions or deletions change the nature of the unit, modifications to

the units may be necessary as well. The national units of analysis provide a standard model, from which States can adjust to reflect actual State conditions.

1. Compare the occupations in the April 2005 national units of analysis to the occupations in your state projections program.

- Identify state projections codes that do not match with the codes in the national units of analysis file. Determine what they represent and assign to units as appropriate.

- Delete national occupation codes that do not have employment in your State. Use the most detailed level of occupations available and do not include summary level occupations codes (or you will be double counting the employment already counted at the detailed occupation level).

- If your state occupation codes differ from the national codes, the occupation codes in the national units of analysis will need to be modified to match your state codes.

2. Compare the programs in the April 2005 national units of analysis to the programs in your State.

- Identify state programs that do not match with the programs in the national units of analysis file. Determine what they represent and assign to units as appropriate.

- Delete national programs that are not offered in your State.

- When reviewing for non-matches, you may need to compare program titles and definitions if your State uses CIP codes that are different from the national CIPs. If your state has different CIP codes, the program codes in the national units of analysis will need to be modified to match your state codes.

- Other supply data not reported by CIP must be assigned to the appropriate units using the a match between the occupation and related training.

3. Review resulting units based on State occupations and programs.

- If you have deleted occupations and/or programs that change the nature of the A and B clusters, you may need to reassign the "leftover" occupations or programs to other units.

4. Review the national analysis statements.

- Modify the occupations in the narrative analysis statements to reflect the occupations that are in the State version of the units of analysis.

- Determine if analysis text about state conditions should be added and do so where needed.

Appendix A
ALMIS Database Units of Analysis Files

cluscode	This table contains one record for every cluster or unit of analysis in the state.		
Column	**Type**	**Constraint**	**Description**
stfips	char(2)	Primary Key 1	State FIPS code.
cluscode	char(10)	Primary Key	Code assigned to the cluster from the State Units of Analysis.
clustitle	varchar(60)		Title assigned to the cluster from the State Units of Analysis.
clusdesc	varchar(2000)		A free form text column intended to contain descriptive data regarding this cluster in this state.
Constraint Information			
1 Foreign Key (cluscode.stfips) references (stfipstb.stfips)  Triggers are suggested to maintain the occcodes table. See explanation in the introductory section under Table Constraints and Triggers. Use triggers on INSERT, UPDATE or DELETE of cluscode to maintain occcodes. (cluscode.stfips, '01', cluscode.cluscode, cluscode.clustitle) maintains (occcodes.stfips, occcodes.codetype, occcodes.code, occcodes.codetitle)			

clusgrad	This table contains one record for each Cluster evaluative rating code.		
Column	**Type**	**Constraint**	**Description**
stfips	char(2)	Primary Key 1	State FIPS code.
clusgrade	char(1)	Primary Key	An evaluative rating code for the cluster.
clusgrdesc	varchar(40)		Description or title of the cluster rating.
Constraint Information			
1 Foreign Key (clusgrad.stfips) references (stfipstb.stfips)			

Prototype values for CLUSGRADE variable		
clusgrade	**1 = Excellent** **2 = Very Good** **3 = Good/Favorable** **4 = Competitive** **5 = Very Competitive** **6 = Ungraded/unassigned**	**analysis** **clusgrad**

analysis This table contains one record for each cluster or unit of analysis. The purpose of the table is to allow the ALMIS Database Administrator to enter text that analyzes the Supply/Demand situation for a state or area, and to display relevant information about replacement rates for programs.

Column	Type	Constraint	Description
stfips	char(2)	Primary Key 1,2,3	State FIPS code.
areatype	char(2)	Primary Key 1	Code describing type of geographic area: e.g. county, service delivery area, MSA.
area	char(6)	Primary Key 1	Six digit code assigned to represent a geographic area. Front fill with zeroes.
periodyear	char(4)	Primary Key 4	Character representation of calendar year (e.g. 1996).
periodtype	char(2)	Primary Key 4	Code describing type of period (e.g. annual, quarterly, monthly, etc.)
period	char(2)	Primary Key 4	Period Code. Will be set to '00' where periodtype is annual.
cluscode	char(10)	Primary Key 2	Code assigned to the cluster from the State Units of Analysis.
analysis	varchar(2000)		A narrative analysis of the factors about the Supply/Demand situation for a state or substate area.
clusgrade	char(1)	3	An evaluative rating for the cluster.
placeclus	varchar(2000)		Narrative statements about the placement rates for programs contained in the Unit of Analysis or Cluster.

Constraint Information

1 Foreign Key (analysis.stfips, analysis.areatype, analysis.area) references (geog.stfips, geog.areatype, geog.area)
2 Foreign Key (analysis.stfips, analysis.cluscode) references (cluscode.stfips, cluscode.cluscode)
3 Foreign Key (analysis.stfips, analysis.clusgrade) references (clusgrad.stfips, clusgrad.clusgrade)
4 Foreign Key (analysis.periodyear, analysis.periodtype, analysis.period) references (period.periodyear, period.periodtype, period.period)

clsxproj This table contains a listing of occupation codes that have been assigned to a Cluster and the percentage of that occupation code's employment that can be attributed to the associated Cluster.

Column	Type	Constraint	Description
stfips	char(2)	Primary Key 1,2,3	State FIPS code.
areatype	char(2)	Primary Key 1	Code describing type of geographic area: e.g. county, service delivery area, MSA.
area	char(6)	Primary Key 1	Six digit code assigned to represent a geographic area. Front fill with zeroes.
cluscode	char(10)	Primary Key 2	Code assigned to the cluster from the State Units of Analysis.
occodetype	char(2)	Primary Key 3	Code describing the occupational code.
occcode	char(10)	Primary Key 3	The occupational classification code used by the state for this data element. This code could be DOT, OES, SOC, Census, etc. For codes not 10 characters long, left justify and blank (ASCII 32) fill.
alloc	number(5,2)		Percentage of the occupation code's employment that can be attributed to this Cluster.

Constraint Information

1 Foreign Key (clsxproj.stfips, clsxproj.areatype, clsxproj.area) references (geog.stfips, geog.areatype, geog.area)
2 Foreign Key (clsxproj.stfips, clsxproj.cluscode) references (cluscode.stfips, cluscode.cluscode)
3 Foreign Key (clsxproj.stfips, clsxproj.occodetype, clsxproj.occcode) references (occcodes.stfips, occcodes.codetype, occcodes.code)

Note:

If occodetype is:	Then occcode refers to a:
01.....	Cluster code
02.....	OES code
03.....	CIP code
04.....	DOT code
06.....	Census code
07.....	CIDS code
08.....	SOC code
09.....	State specific code
12.....	O*NET code
13…….	Micro Matrix code

clsxsupl This table contains a listing of training program codes and completer types from that training program that have been assigned to a Cluster.

Column	Type	Constraint	Description
stfips	char(2)	Primary Key 1, 2, 3, 5	State FIPS code.
areatype	char(2)	Primary Key 1	Code describing type of geographic area: e.g. county, service delivery area, MSA.
area	char(6)	Primary Key 1	Six digit code assigned to represent a geographic area. Front fill with zeroes.
periodyear	char(4)	Primary Key 4	Character representation of calendar year (e.g. 1996).
periodtype	char(2)	Primary Key 4	Code describing type of period (e.g. annual, quarterly, monthly, etc.)
period	char(2)	Primary Key 4	Period Code. Will be set to '00' where periodtype is annual.
cluscode	char(10)	Primary Key 2	Code assigned to the cluster from the State Units of Analysis.
codetype	char(2)	Primary Key 5	Code describing the type of occupation or training code.
code	char(10)	Primary Key 5	The classification code used by the state for this data element. This code could be DOT, OES, CIP, Cluster, SOC, Census, etc. For codes not 10 characters long, left justify and blank (ASCII 32) fill.
compltype	char(2)	Primary Key 3	Two digit code representing the type of program completer.

Constraint Information

1 Foreign Key (clsxsupl.stfips, clsxsupl.areatype, clsxsupl.area) references (geog.stfips, geog.areatype, geog.area)
2 Foreign Key (clsxsupl.stfips, clsxsupl.cluscode) references (cluscode.stfips, cluscode.cluscode)
3 Foreign Key (clsxsupl.stfips, clsxsupl.compltype) references (compltyp.stfips, compltyp.compltype)
4 Foreign Key (clsxsupl.periodyear, clsxsupl.periodtype, clsxsupl.period) references (period.periodyear, period.periodtype, period.period)
5 Foreign Key (clsxsupl.stfips, clsxsupl.codetype, clsxsupl.code) references (occcodes.stfips, occcodes.codetype, occcodes.code)

Note:

If codetype is:	Then code refers to a:
01.....	Cluster code
02.....	OES code
03.....	CIP code
04.....	DOT code
06.....	Census code
07.....	CIDS code
08.....	SOC code
09.....	State specific code
12.....	O*NET code
13…….	Micro Matrix code

Appendix B
Units of Analysis Files Non-ALMIS Format

Field Name	Type	Width	Description
STFIPS	Character	2	State FIPS Code (Leave blank to apply to all area data)
AREATYPE	Character	2	Code for the type of area the units apply to (Leave blank to apply to all area data)
AREA	Character	6	The sub-state area data the units apply to (Leave blank to apply to all area data)
CLUSCODE	Character	10	Cluster Code
CODETYPE	Character	1	The type of classification code in the preceding field. The prototype units of analysis use the following four types: 1 = Cluster code, 2 = SOC, 3 = CIP
CODE	Character	10	The classification system code assigned to the cluster
TITLE	Character	95	Title corresponding to the code in the field OIDCODE
SUPERCLUS	Character	2	A two-digit supercluster number used in a clustering hierarchy and in a units of analysis funnel search in the OIS.
CLUSGRUP	Character	2	A two-digit broad cluster group (below the supercluster level) used in a units of analysis clustering hierarchy and the funnel search.
CAREERCLS	Character	4	Department of Education Career Cluster